

A METHOD OF PERMANENT DRAINAGE OF BOTH KIDNEYS THROUGH THE LOIN IN CONNECTION WITH BILATERAL NEPHROSTOMY.

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(An addendum to an article by the same writer published in the December number of the *Annals of Surgery*, 1905.)

IN the December number of the *ANNALS OF SURGERY*, there was published an article by me in which I endeavored to establish certain things in connection with a proposal to adopt a new and somewhat radical method for the surgical treatment of tumors of the bladder, the following being the more important of them:

1. That the operative treatment of tumors of the bladder had been hitherto far from encouraging in its results. The results were set forth in the form of an analytical study of a large number of cases reported by different surgeons of various countries, and were arranged with reference to the special kinds of operations that had been applied to the special kinds of tumors.

2. That the reasons for the unusually large proportion of failures which had attended the operative treatment were as follows: (a) The inadequacy of the less radical measures to the ends which they aim to secure, even in the cases of benign tumors. (b) The too-tardy employment of operative measures. (c) The failure and dangers of ureteral implantation.

The assertions were supported by data consisting of a large number of cases.

The following conclusions were expressed as those derived from the study of the subject:

1. That ureteral implantation should be abandoned as a means for diverting the urine in connection with total extirpation or resection of the bladder in cases of vesical or prostatic

tumors, and that permanent renal fistula established by lumbar nephrostomy (unilateral in case of resection of the bladder necessitating the division of one ureter; bilateral, when both are involved), be substituted for it, and that the renal operations shall be done as a preliminary step to the operations upon the bladder, the latter being performed at whatever time subsequent to the nephrostomy the patient's condition should have become good enough to have them undertaken.

In doing the nephrostomies, the ureters should be tied off as near as possible to the pelves of the kidneys.

2. That total extirpation of the bladder should be performed at as early a period as possible after nephrostomy had been done in all cases of malignant tumors of the organ in which the disease had not exceeded the limits of the bladder or prostate and seminal vesicles, and in which there was believed to be no metastasis present. This should be performed at the outset,—that is to say, it should not be preceded by some less radical measure in that class of cases, and the same should be done in all cases of benign vesical tumors which have occurred more than once.

The writer proposed to have this plan applied only to patients in good circumstances who could care for the renal fistulæ properly.

The dangers of nephrostomy *per se* were stated to be exceedingly small, and this assertion was supported by the results of a large number of cases in which the operation has been done.

The inconveniences and distress attending renal fistula the writer believed could be avoided if a proper provision was made for draining the kidneys through the loin. He cited one of his cases as an example of the successful employment of a simple and practical manner of arranging such apparatus, which was that of a man upon whom he had performed nephrostomy and established a permanent renal fistula on one side eleven years ago and who had had the same procedure carried out upon the second kidney by his colleague, Dr. Thorndike, upon the other kidney four years ago. This patient had worn the apparatus and passed all the urine for eleven years through the loin on one side, and during the last four years through the loin of both sides and from both kidneys. Not only had the operations in each instance saved the patient's life, but he

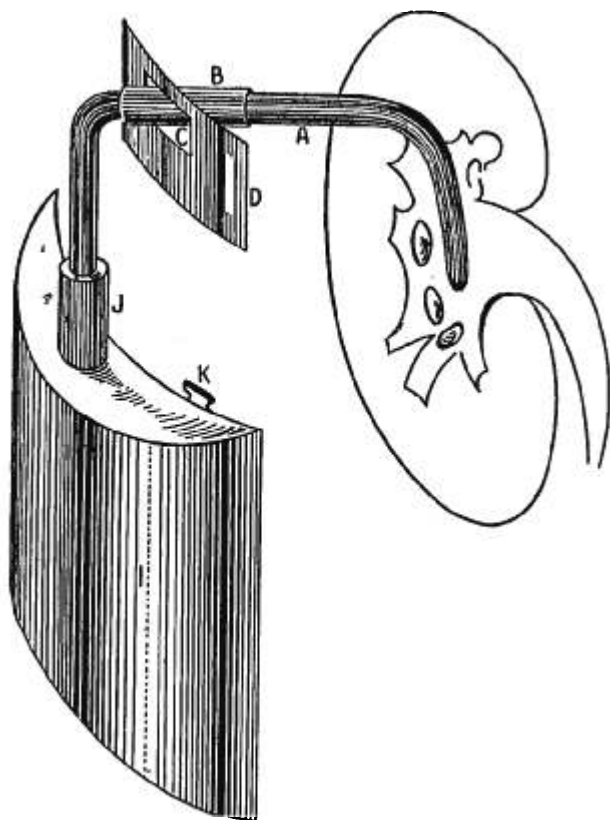


FIG. 1.—*a*, drainage catheter; *b*, rubber tubing which fits into orifice of fistula and is held by horizontal opening in shield *c*; *f*, flask to receive urine; *j*, nozzle of flask into which outer end of catheter is passed; *k*, ring used to attach flask to hook on waistband (fig. 3-*k*).

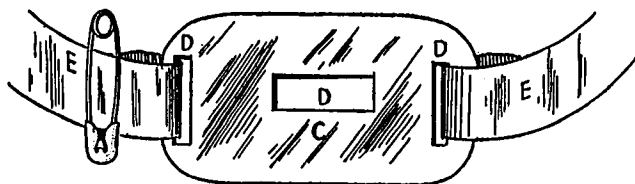


FIG. 2.—Shield with tape attached to the holes at its ends.—*c*, Shield; *d'-d'*, openings for tape; *e-e'*, ends of tape band which attaches the shield to the patient's back.

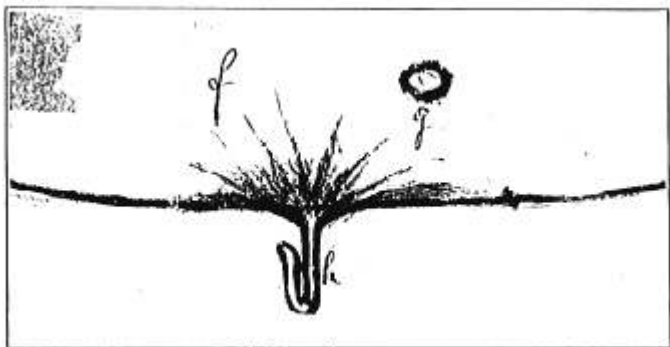


FIG. 3.—A bit of the waistband showing one of the hooks to which the reservoirs are attached and the hole through which one of the catheters is passed; *f*, waistband; *g*, hole for catheter; *h*, hook.

had been restored by them to entire health and to-day both kidneys are secreting approximately a normal amount of nearly normal urine. The patient is entirely comfortable; he is pursuing an active business life; not a drop of urine leaks around the drainage tube and consequently there is no odor and he is entirely dry. No one is aware of his condition. In short the patient's history subsequent to the operation shows that it is perfectly possible to so arrange drainage from permanent renal fistulæ as to secure for the patient health, comfort, active life and entire freedom from distressing conditions of any sort.

The apparatus by which this result has in this case been accomplished was not described in the writer's article published in the December ANNALS. A number of inquiries with regard to it have convinced him that it would be worth while to present it, with which intention the following description is given, with illustrations on opposite page.

The following articles compose the apparatus for draining the kidney. (In the illustrations, one of each of the different parts of the drainage apparatus only is designated, and is intended to serve as the example of all similar parts of it when these are duplicated for the double-sided drainage.)

1. Two red rubber drainage catheters. (Fig. 1a.)
2. Two bits of rubber drainage tube each two and a half inches long (more or less, according to the thickness of the patient's back), and of a size to fit tightly upon the catheters and in the horizontal opening of the shield through which they are passed. (Fig. 1b.)
3. Two hard rubber shields (Figs. 1 and 2c) about three inches in length, two inches wide, and curved to fit the back. There are three openings in each of the shields (*d, d', d''*, Fig 2), two perpendicular and one horizontal; the latter should be a little narrower than the rubber tubing *b* in order that it may compress the tubing firmly enough to prevent it, and the catheter which passes through it, from slipping to or fro. The former are long enough to admit tapes an inch wide.
4. Two pieces of strong tape or elastic webbing. (Fig. 2e.) One end of this tape is attached to the outer of the two perpen-

dicular openings in the plate. The tape should be long enough to pass around the body and is secured in the opening at the further end of the shield by safety pin or other device as may be preferred. Elastic bands have the advantage, as compared with tapes, of adapting themselves to the movements of the body and thus keeping the shield constantly apposed to the back.

5. A waist band (Fig. 3*f*) long enough to go around the body and about four inches wide. This band should be of stout material; its front ends are brought together by a couple of straps and buckles; on the lower border of the back of the waist-band are attached four stout hooks, and there are two holes to allow the catheters to be led through the band. (Fig. 3 *g* and *h* represent the part of the band showing the hook and one hole.)

6. Two flasks, five inches long by four inches high by one and one half inches wide, curved to fit the gluteal regions; each having a nozzle projecting one inch above the middle of its top and just large enough to admit the ends of the catheters, and provided with a ring firmly soldered near either end of the inner side of the tops of the flasks. (Flasks, Fig. 1 *i*; nozzle *j*; rings *k*.)

The flasks may be made of hard rubber, aluminum or any other suitable material having a surface that will not absorb the urine.

Precautions to be observed in applying the apparatus.—Before placing the apparatus upon the patient the points within the kidneys from which the ends of the drainage catheters will best drain the organs should be determined, and the catheters marked at the point at which they emerge from the mouths of the fistulæ; this mark will serve as a guide to show how far the instruments should be passed in and also where to place the bits of rubber tubing upon them. The marks on the catheters should correspond to the middle of each bit of tubing.

One other precaution must be observed with respect to the places of the ends of the catheters in the kidneys, viz., *they must not cause pain to the patient.* This will be produced if the ends rest in the pelvis too near to outlet, and in my patient I have known a faulty position of the tubes call forth, though in a moderate degree only, the characteristic pain of renal colic.



FIG. 4. - Urine receptacles adjusted to receive secretion from Kidneys.



FIG. 5.—Urine receptacles adjusted to receive secretion from Kidneys; retention girdle applied.

In what follows with regard to the manner of applying the apparatus, it is referred to as though but one side was to be drained, in order to make the description simpler and more readily understood.

Enter the catheter, with its bit of rubber tubing properly placed upon it, into the fistula until one-half of the tubing lies within the mouth of the tract.

Put the outer end of the catheter through the central opening in the shield and push the latter along the catheter and bit of tubing until it lies against the surface of the back. Then pass the free end of the tape (or elastic band) belonging to the shield around the waist and through the perpendicular opening in the other end of the shield and attach it securely there.

The catheter is thus securely fixed in place so that it cannot be moved either inward or outward, as is shown on the right side of the back in Fig. 4.

Attach the waist band to the patient, passing the catheter through the opening in the back of it made for that purpose.

Fasten the reservoir (flask) upon the waist band by passing the hooks upon the latter through the rings upon the upper edge of the former, and insert the end of the catheter into the nozzle of the flask (Fig. 5).

When it is necessary to empty the flask, the patient can readily detach it himself.

Every night the catheter which has been worn through the day is replaced by another, which should be boiled for fifteen minutes previous to its being used. The night catheter is replaced in the same way by the other in the morning. When this is done, the kidney and the fistula should be irrigated gently with warm sterile saline solution, permanganate of potash (one part to 5000 of water) or other bland cleansing fluid that the surgeon may prefer. The flasks should be boiled once every twenty-four hours, and thoroughly washed out at least once besides in each day.

This is the form of apparatus which has been employed by me in the case of the patient referred to earlier in the communication, and with which he has been perfectly satisfied and comfortable. It requires care and attention to keep it clean,

and must be placed upon the patient properly if it is to answer its purpose. In considering the trouble that there is in taking care of such an arrangement it should be remembered that the conditions under which it would be employed are, or rather have been, desperate and if, after life has been saved by operative intervention, an apparatus can be devised whereby the patient is rendered entirely comfortable, as was the case in this instance, the matter of its being more or less troublesome to apply and to keep in proper condition is of very little importance in view of the benefits that have been obtained and the comfort and good health of the patient that have been secured.

The means by which the kidneys were drained in this case is only one of a number by which the same end might be attained, nor is it, in the writer's judgment, the most convenient form of apparatus that could be used for accomplishing it, but having had practical experience with this one, it has seemed better to describe it.